Orthotics – prosthetics – trunk orthoses – podo-orthosis

Lecture

CO75-001-e
Evidence based physical and rehabilitation medicine: Conservative approach to adolescents with idiopathic scoliosis
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Background.– Physical and rehabilitation medicine (PRM) plays a primary role in treating adolescents with idiopathic scoliosis (AIS): all therapies (exercises, braces) fall into PRM domain. According to a Cochrane systematic review there is evidence in favor of bracing.

Results.– Three meta-analysis have been published: one shows that bracing does not reduce surgery rates, but studies with bracing plus exercises were not included and had the highest effectiveness; another shows that full time is better than part-time bracing; the last focuses on observational studies following the SRS criteria and shows that not all full time rigid bracing are the same: some have the highest effectiveness, others have less than elastic and night-time bracing. Two very important RCTs failed in recruitment, showing that in the field of bracing for scoliosis RCTs are not accepted by the patients.

Discussion.– Consensuses by the international Society on Scoliosis Orthopaedic and Rehabilitation Treatment (SOSORT) show that there is no agreement among experts either on the best braces or on their biomechanical action, and that compliance is a matter of clinical more than patients' behaviour.

Conclusion.– Research on AIS conservative treatment continuously decreased since the 80ies, but this trend changed recently. The SOSORT guidelines offer the actual standard of conservative care.

Oral communications

CO68-001-e
Locomotion adjustments of transfemoral amputees on cross-slopes
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Keywords: Transfemoral amputation; Locomotion; Motion analysis; Side-slopes; Limiting situations

Objectives.– Cross-slopes locomotion is a daily living situation [1]. The aim is to describe, using quantitative parameters obtained by motion analysis, the adjustments strategies of transfemoral amputees during cross-slopes walking compared to level walking.

Methods.– Thirteen transfemoral amputees, 17 control subjects were recruited. Joint kinematics and kinetics in the frontal plane and pelvis inclination were computed on a flat surface and on a cross-slopes device (10%) [2]. The variation of significant parameters was analyzed between situations to characterize locomotion adjustments.

Results & discussion.– When the prosthetic limb is up-slope, the situation is more limiting for patients. During stance phase, the incomplete adjustment of the prosthetic ankle and the maintenance of constant hip moments between conditions impact on the pelvis kinematics, which is altered during cross-slopes walking compared to level walking, unlike control subjects. During swing phase, ensuring toe clearance of prosthetic limb worsens strategies already described during level walking (vaulting, pelvic hike).

References

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Analyze of stump-socket interface pressures in above-knee amputees
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Keywords: Pressure; Prosthesis; Synchronization; Socket; Stump

Objectives.– This study aimed at defining new relevant parameters to investigate stump-socket interface pressure variations in above-knee amputee, with regard to clinical exams and questioning about comfort, pain and wounds.

Methods.– Pressure variations were assessed during gait with 14 piezoresistive sensors placed on the stump of 23 patients. Criteria were pressure peak values, cross-correlation coefficients between sensors, and clinical scales. Principal component analyses (PCA) were performed on these parameters to reach meaningful data.

Results.– PCA evidenced that synchronization parameters distinguish well-fitted and poorly-fitted prostheses. The synchronization score (weighted mean of cross-correlation coefficients) summarized well the synchronization pattern and ranged from .78 to .97. Patients exhibiting a low synchronization score